



# UNITED STATES PATENT AND TRADEMARK OFFICE

7.

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,098	12/11/2003	Paul R. McHugh	291958232US1	7992
50689	7590	09/07/2007		
PERKINS COIE LLP				
P.O. BOX 1247				
PATENT-SEA				
SEATTLE, WA 98111-1247				
EXAMINER				
WILKINS III, HARRY D				
ART UNIT		PAPER NUMBER		
1753				
MAIL DATE		DELIVERY MODE		
09/07/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/734,098	<b>Applicant(s)</b> MCHUGH ET AL.	
	<b>Examiner</b> Harry D. Wilkins, III	<b>Art Unit</b> 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-13,15-28,30-40,42-47 and 60-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,5-13,15-25,34-40,42-47 and 60-62 is/are allowed.
- 6) ☒ Claim(s) 26-28 and 30-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/12/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status***

1. The rejection of claims under 35 U.S.C. 112, second paragraph have been withdrawn in view of Applicant's amendment.
2. The indicated allowability of some claims is hereby withdrawn in view of Applicant's express request that the subject matter of US 2005/0167275 be considered as admitted prior art. Thus, unless a claim is specifically recited as allowed below, the indication of the allowability of the claim should be considered withdrawn.

### ***Terminal Disclaimer***

3. The terminal disclaimer filed on 12 July 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application No. 10/734,100 has been reviewed and is accepted. The terminal disclaimer has been recorded.
4. The terminal disclaimer filed on 12 July 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application No. 10/733,807 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff et al (US 2001/0032788) in view of Keigler et al (US 2005/0167275).

Woodruff et al teach (see figures) a system for processing microfeature workpieces including a vessel configured to receive a processing fluid, the vessel having a generally planar process location positioned to receive a microfeature workpiece, the microfeature workpiece having a maximum width at the process location, a workpiece support positioned to releasably carry a microfeature workpiece at the process location of the vessel.

Thus, Woodruff et al fail to teach a paddle device and controller as claimed.

Keigler et al teach (see abstract, figures 12-19 and paragraphs 99-117) that addition of a paddle device and controller for controlling the motion of the paddle device adjacent to the process location of an electroplating cell improves agitation of the electrolyte, thereby decreasing the boundary layer thickness during the electroplating. By decreasing the boundary layer thickness, throughput and uniformity can be increased and material consumption can be decreased. Additionally, Keigler et al teach that the stroke pattern of the paddle device is such that relative motion between the paddle and workpiece included a stroke which changed between successive reciprocations as claimed.

Therefore, it would have been obvious to one of ordinary skill in the art to have added the paddle device and controller of Keigler et al to the system of Woodruff et al

for the purpose of increasing throughput and uniformity of the electroplating and decreasing material consumption.

Regarding claim 28, it would have been within the expected skill of a routineer in the art to have optimized the rate of acceleration of the paddle to maintain the constant velocity over as large a portion as possible, and to achieve proper agitation of the electrolyte solution

Regarding claim 30, as above, Woodruff et al teach the vessel and workpiece support and Keigler et al suggest addition of a paddle device and controller as claimed.

Regarding claim 31, it would have been within the expected skill of a routineer in the art to have optimized the center of stroke position of the paddle to ensure adequate agitation across the entire workpiece surface.

Regarding claim 32, the controller was connected to the paddle device.

Regarding claim 33, the multiple paddles operated in the claimed fashion, with a constant spacing between paddles.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff et al (US 2001/0032788) in view of Keigler et al (US 2005/0167275) as applied to claim 27 above, and further in view of Browne et al (US 6,955,747).

The teachings of Woodruff et al and Keigler et al are described above.

However, neither Woodruff et al nor Keigler et al teach or suggest including a magnet positioned to impose a magnetic field on a workpiece when the workpiece is carried at the process location to orient material deposited on the workpiece.

Browne et al teach (see figure 4) including a magnet positioned proximate to the process location to orient material deposited at the process location.

Therefore, it would have been obvious to one of ordinary skill in the art to have combined the known conventional magnet as shown in Browne et al for its known conventional purpose of orienting material deposited by electroplating, with the expected result being improved orientation and uniformity of the deposited material.

***Allowable Subject Matter***

8. Claims 1-3, 5-13, 15-25, 34-40, 42-47 and 60-62 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter:
  - a. Claim 1 - the prior art does not teach or suggest a fluid inlet within a sidewall portion of the paddle chamber;
  - b. Claim 34 - the prior art does not teach or suggest using a plurality of non-parallel paddles;
  - c. Claim 36 - the prior art does not teach or suggest using multiple paddles that differ in shape and/or size from each other;
  - d. Claim 40 - the prior art teaches making the paddle from solid (non-porous) material, and provides no motivation to make the paddle from a porous material;
  - e. Claim 45 - the prior art does not teach or suggest using a paddle which changes shape and/or size across its length

- f. Claim 60 - the prior art does not teach or suggest forming a separate chamber within the vessel including a semi-solid (i.e.-porous) base portion for partially (or fully) enclosing the paddle;
- g. Claim 61 - the prior art does not teach or suggest a tilted (inclined) base portion; and,
- h. Claim 62 - the prior art does not teach or suggest forming holes (highly flow-restrictive apertures) within the paddle.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

2. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 12 July 2007 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


Art Unit: 1753

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 7:45am-4:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Harry D Wilkins, III  
Primary Examiner  
Art Unit 1753

hdw